

REMARKS:

The Examiner has rejected claims 1-12 under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi (6,208,492) in view of Pinarbasi (6,317,299) or Huai et al. (6,381,105). In addition, the Examiner has rejected claims 16 and 19 as being unpatentable over Pinarbasi (6,208,492) in view of Pinarbasi (6,317,299) or Huai et al. (6,381,105) and additionally in view of Deutchman et al. (5,055,318). The Applicant has amended claim 1 to include the limitations of claim 19, and has cancelled claim 19. Therefore, the following discussion of claim 1 as amended, addresses the Examiner's rejections of claim 19.

With regard then, to claim 1, claim 1 as amended recites a method for forming a magnetic head having an improved PtMn layer, comprising: forming a PtMn layer using ion beam deposition; forming an antiparallel (AP) pinned layer structure above the PtMn layer; forming a spacer layer above the AP pinned layer structure; forming a free layer above the spacer, wherein the ion beam deposition comprises an ion assisted ion beam deposition performed using first and second ion sources, the first ion source being directed at a target and the second ion source being an ion assist source (IAD) directed at a substrate on which material from the target is to be deposited.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir.1991).

The Applicant respectfully asserts that, with regard to claim 1, the above cited references do not satisfy any of the three criteria set forth above as necessary to establish a *prima facie* case of obviousness, and that, therefore, claim 1 is allowable.

over the prior art. Deutchman et al. teaches a method for depositing a material such as a diamond coating using dual ion beam vacuum deposition. The process taught by Deutchman et al produces a hard stress reduced deposited layer. Nothing, in any of the references would lead one skilled in the art to the conclusion that the deposition method taught by Deutchman et al could be used to deposit a PtMn AFM layer in a magnetoresistive sensor as recited in claim 1, or that such a deposited PtMn layer would improve the soft magnetic properties and dR of the sensor as taught by the Applicant for example on pages 16-17 of the present Application.

In fact, the only mention Deutchman et al makes of magnetoresistive sensors is to depositing a hard diamond layer over the top of a sensor. There is no suggestion that any of the layers of the sensor itself could be deposited by a dual ion beam deposition process, let alone any suggestion that such a deposition of layers of the sensor could lead to improved magnetic properties of any of these layers. It would seem logical, that if it were obvious to use the deposition method of Deutchman et al to deposit a PtMn layer of a sensor, such a deposition of the PtMn layer would have at least been mentioned, especially in light of the fact that Deutchman mentions such sensors with regard to using the method to deposit a diamond protective layer there over.

Therefore, as can be seen, the first of the criteria set forth above to establish a *prima facie* case of obviousness has not been met. In addition, because of the unpredictable nature of magnetic films in magnetoresistive sensors, there would be no expectation that the process taught by Deutchman would work when depositing a PtMn layer in a magnetoresistive sensor. This is especially true in light of the fact that Deutchman primarily addresses the deposition of carbon films such as diamond films, and does not address layers such as the magnetic or antiferromagnetic layers of a magnetoresistive sensor. Therefore, the third criteria of the test set forth above has also not been met.

With regard to the third criteria set forth above, “the prior art reference (or references when combined) must teach or suggest all the claim limitations, [and] the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant’s disclosure.”

As discussed above, there simply is no suggestion or motivation in the references to make the claimed combination, or that the claimed combination would work. Therefore, the third criteria of the test set forth above has not been met either.

For the reasons set forth above, the Applicant sincerely believes that claim 1 as amended is allowable over the prior art. In addition, claims 2-12, which depend from allowable claim 1 are, necessarily, also allowable over the prior art.

With regard to claim 16, this claim recites the deposition of a PtMn layer, wherein the ion beam deposition comprises an ion assisted ion beam deposition performed using first and second ion sources, the first ion source being directed at a target and the second ion source being an ion assist source (IAD) directed at a substrate on which material from the target is to be deposited. For the reasons discussed above with reference to claim 1, the references do not teach or suggest a method of forming a magnetoresistive sensor in this manner, and there would be no expectation that such a method would work. Therefore, the Applicant sincerely believes that claim 16 is also allowable over the prior art.

The Applicant sincerely believes that the remaining claims are in condition for allowance. A notice of allowance is, therefore, respectfully requested. In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 971-2573. For payment of any additional fees due in connection with the filing of this paper, the Commissioner is authorized to charge such fees to Deposit Account No. 50-2587 (Order No. HSJ920030150US1).

Respectfully submitted,

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